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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,243	03/17/2005	Kenji Yoneyama	02157/0202642-US0	4139

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EXAMINER
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VERDERAME, ANNA L

ART UNIT	PAPER NUMBER
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1756

MAIL DATE	DELIVERY MODE
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08/07/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/528,243

**Applicant(s)**

YONEYAMA ET AL.

**Examiner**

Anna L. Verderame

**Art Unit**

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date: _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/17/2005</u>  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida et al. 2001/0041242 in view of Kawada et al. 2002/0028287.

Hayashida et al. teaches an optical recording medium as shown in figures 1-2 Having a silane coupling agent film 5 formed on underlying layer 4. Underlying layer 4 comprises two layers, namely an inner layer 41 on the side of the supporting substrate 1 and a surface layer 42 formed on the side of the silane coupling agent film. The underlying layer may be the light-transmitting layer or the supporting substrate(0073). The light-transmitting layer or the substrate are preferably formed of polycarbonate or polymethyl methacrylate or other conventional resin material(0070). Example two teaches coating of a hard coat layer on a substrate and subsequently coating a silane coupling agent on the hard coat layer (0131). Use of electron beam (0113). The object of this invention is to form a light-transmitting layer having improved lubricity and durability(0011).

Hayashida et al. does not teach the use of an electron beam having an acceleration voltage between 20 and 100 kV to cure the surface layer composed mainly of resin.

Kawada et al. teaches the use of electron beams having an acceleration voltage of 50-150 kV to cure a resin composition comprised mainly of a urethane(meth)acrylate oligomer (abstract). Kawada et al. also teaches curing the resin in an atmosphere of nitrogen or helium under atmospheric pressure having an oxygen concentration of up to 1,000ppm(less than 1%)(abstract).

It would have been obvious to one of ordinary skill in the art to modify the example of Hayashida et al. by irradiating the methacrylate resin layer with electron beams having an acceleration voltage between 50-100kV based on the teaching of Kawada et al. with the reasonable expectation of success in curing the resin layer.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mino et al. 2002/0176957 with Wu et al. 2003/0017368 in view of Kawada et al. 2002/0028287.

Mino et al. teaches a method for forming an optical recording medium like that in figure 1 comprising a step of spin-coating a light-curing acrylic resin and curing this to form a transparent protective film **16** on a second dielectric layer **15**, coating a hard coat film **17** onto the surface of the transparent protective film **16**, and finally forming a stain-resistant silicon containing film **18** on the hard coat layer **17**(0069-0071). Silicon compounds used are discussed at 0060. Oil-repellency taught at 0025.

Wu et al. teaches a lubricant coating for recording media. Use of fluoropolyethers is discussed at (0029-0034). Use of electron beams to polymerize the fluoropolyethers in an inert atmosphere is taught at (0038).

Mino et al. does not teach curing of the resin layer by irradiating the resin layer with electron beams of which an acceleration voltage is between 20-100kV.

Kawada et al. teaches the curing of a urethane (meth)acrylate containing resin by exposure to electron beams having an acceleration voltage of 50-150kV. Curing is done in an atmosphere of helium or nitrogen having an oxygen concentration of up to 1,000ppm (less than 1%)(abstract). Specific examples of suitable resins are discussed at (0015-00244).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mino et al. by forming the transparent protective film of the specific acrylic resin taught by Kawada et al. and curing the resin by exposure to electron beams having an acceleration voltage between 50-100kV based on the teaching of Kawada et al. with the reasonable expectation of success based on the teaching of Mino et al. that the transparent protective film be formed of an acrylic resin.

Further, it would have been obvious to one of ordinary skill in the art to form the stain-resistant and oil repellant film **18** taught by Mino et al. using the fluoropolyether compounds taught by Wu et al. with the expectation of forming a medium having high lubricity as taught by Wu et al.

4. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mino et al. 2002/0176957 with Wu et al. 2003/0017368 in view of Kawada et al. 2002/0028287 as applied above further in view of Hayashi et al. WO 00/74120(US 6,961,113 used as a translation).

The combination of Mino et al. 2002/0176957 with Wu et al. 2003/0017368 in view of Kawada et al. 2002/0028287 as applied above does not teach the limitations of claims 5-7.

Hayashi et al. teach an exposure method and apparatus. Hayashi teaches the use of gases such as N<sub>2</sub>, He, Ne, Ar, Kr, Xe, and Rn to reduce the attenuation of the exposure beam[WO p.25-36/(16/48-65)]. These gases are termed "purge gases" in the remainder of the application. Hayashi et al. further teaches a feeding/exhausting mechanism. Impurity sensors are used or measuring the concentration of absorptive substances such as oxygen inside the chambers[WO p32-33/(20/46-68)]. Use of an electron-beam exposure apparatus is taught[WO p. 40/(25/52-67).

It is held that shield container of the instant application is identical to the sealed chambers of Hayashi because in order to control the atmospheric composition of the shield it must be sealed off from the outside.

In regard to claim 7, the applicant has the burden of establishing criticality of the limitations recited in this claim that distinguish the product formed by this specific process from those found in the prior art.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use an exposure apparatus such as that taught by Hayashi et al. and to control the atmospheric composition using a feeding/exhausting mechanism in which oxygen is purged from the system and gases such as N<sub>2</sub>, He, Ne, Ar, Kr, Xe, and Rn replace oxygen, and further to monitor the oxygen concentration using sensors based on the teaching of Hayashi et al. that these gases reduce laser attenuation and on the teaching of Kawada et al. that curing should occur in a nitrogen atmosphere where the oxygen concentration is less than 1% and finally based on the disclosure in Wu et al. at (0038) that curing of the fluoropolyether overcoat should be done in an inert atmosphere.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mino et al. 2002/0176957 with Wu et al. 2003/0017368 in view of Kawada et al. 2002/0028287 as applied above and further in view of Tsuboi et al. JP 62155965.

The combination of Mino et al. 2002/0176957 with Wu et al. 2003/0017368 in view of Kawada et al. 2002/0028287 as applied above does not teach the limitation of claim 4 of the instant application.

Tsuboi et al. teach the formation of a protective film consisting of a transparent resin. The protective film is formed by spraying the resin on the surface of the optical disk while rotating the disk at a high speed so as to radially diffuse the resin over the disk surface. The resin is then uniformly cured by exposing the disk while simultaneously rotating the disk at a lower speed(abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Mino et al. by first spin-coating the light-transmitting resin onto the second dielectric layer and subsequently curing the resin while rotating the disk at a lower speed with the expectation of forming a uniformly cured resin layer as disclosed in Tsuboi et al.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mino et al. 2002/0176957 with Wu et al. 2003/0017368 in view of Kawada et al. 2002/0028287 as applied above further in view of Takayama et al. 2002/0139939.

The combination of Mino et al. 2002/0176957 with Wu et al. 2003/0017368 in view of Kawada et al. 2002/0028287 as applied above does not teach the limitations recited in claim 8 of the instant application.

Takayama et al. teaches a method for controlling the depth of penetration of the electron beam by changing the acceleration voltage. A low acceleration voltage provides a small depth of penetration and a larger acceleration voltage provides a greater depth of penetration(0055).

It would have been obvious to one of ordinary skill in the art at the time of the invention to change the acceleration voltage in consideration with the thickness of the resin layer based on the disclosure of Takayama et al. and with the expectation of forming a process in which energy is conserved by setting the voltage in accordance with the thickness of the resin layer so that neither too much nor too little energy is applied to the resin layer.



**Conclusion**

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-2003/0017368- teaches provision of a lubricating protective layer on a magnetic recording medium. Use of fluoropolyeters(0029-0035). Use of electron beams to cure (0038).

-2002 /0054975-equivalent to 2001/0041242 applied above

- Nishi 2001/0028456-apparatus –monitoring of atmospheric composition

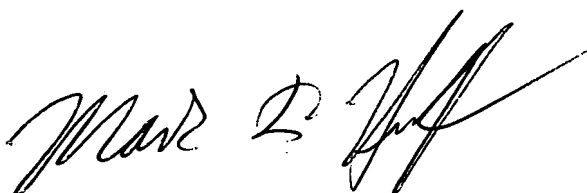
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna L. Verderame whose telephone number is (571)272-6420. The examiner can normally be reached on M-F 8A-4:30P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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